AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the

application:

LISTING OF CLAIMS:

1.   (currently amended) A method for enhancing a trail/path protection function in ~~at~~ least one of a synchronous digital hierarchy (SDH) network and a synchronous optical networking (SONET)~~SDH/SONET~~ network, the network comprising a number N of working resources and a number M of protection resources and transmitting signal frames having a section overhead (SOH) in SDH technology, or a Line OverHead (LOH) in SONET technology, and a path overhead (POH)~~POH~~, said trail/path protection function comprising a linear multiplex section protection (MSP) ~~MSP~~N:1 trail protection function based on transmission of protection information through K1 and K2 bytes of ~~Section OverHead~~ the SOH in the SDH technology or ~~Line OverHead~~ the LOH in the SONET technology, wherein the method ~~further~~ comprises:

~~the step of~~ mapping ~~the~~ content of said K1 and K2 bytes by a protocol exchange into POH bytes of the path overhead in the SDH or the SONET technology, for at least one of a Low Order path level ~~and/or~~ and a High Order path level~~, so as~~ to allow ~~the~~ handling of the M ~~more than one protecting~~ protection resources ~~resource~~ shared among ~~different~~ the N working resources~~, both~~ in an end-to-end handling and in ~~an~~ intermediate handling, wherein mapping comprises:

       providing a first multiframe,

       mapping the content of the K1 and K2 bytes into a first portion of the POH bytes for each frame of the first multiframe for the end-to-end handling,

       providing a second multiframe, and

       mapping the content of the K1 and K2 bytes into a second portion of the POH bytes for each frame of the second multiframe for the intermediate handling.

2.   (Currently amended) A The method according to claim 1, wherein the step of mapping the content of said K1 and K2 bytes into the POH bytes further comprises one of:

mapping into K3 byte at the high order path level and into K4 byte at the low order path level for the SDH technology; and

mapping into Z4 byte at the high order path level and into Z7 byte at the low order path level for the SONET technology.

3.   (canceled)

4.   (Currently amended) A The method according to claim 2, wherein the step of mapping the content of said K1 and K2 bytes into the POH bytes further comprises:

providing a four-bit based multiframe for the first multiframe.

5.   (Currently amended) A The method according to claim 2, wherein the step of mapping the content of said K1 and K2 bytes into the POH bytes further comprises:

providing a two-bit based multiframe for at least one of the first and second multiframe.

6.   (Currently amended) A The method according to claim 1, further comprising:

wherein, in case of failure of one of the working resources, performing a check step is performed for checking whether at least one of the protection resources is available , namely in the an idle state if one of the working resources fails; and

providing a check result.

7.   (Currently amended) A The method according to claim 6, wherein performing the check step comprises:

is performed by assigning a number to each one of the protection resources resource; and

scanning, either in increasing or in decreasing order, the protection resources in one of an increasing order and a decreasing order of the assigned numbers.

8.   (Currently amended) A The method according to claim 6, wherein, in case of
positive check, a new switch criterion is taken into account by an automatic protection switching
(APS)APS controller as a valid input, a consistent Bridge Request is issued and actions required
by the new switch criterion are performed by using the available protection resource, regardless
the priority level levels of Bridge Requests already being served, if the provided check result is
positive.

9.   (Currently amended) A The method according to claim 86, wherein, in case of
negative check, the priority level levels of the Bridge Requests currently served is checked and
compared with a priority of the new switch criterion, if the provided check result is negative.

10.   (Currently amended) A The method according to claim 9, wherein if the priority
of the new switch criterion is higher than at least one priority level of the Bridge Requests
currently served, then, the lowest priority request is pre-empted by the request associated to the
new switch criterion and the actions required are performed by using the protection resource
previously used by the pre-empted Bridge Request.

11.   (Currently amended) A The method according to claim 9, wherein:
        if the priority of the new switch criterion is lower than or equal to the priority levels of
the Bridge Requests currently served, then, the new switch criterion is not considered as a the
valid input for the APS controller and not signalled through protocol bytes; and
        if the new switch criterion is a command, the new switch criterion it is dropped, namely
it by is not being kept in a pending status.

12.   (Currently amended) A The method according to claim 6, wherein, when more
than one switch initiation criteria criterion are simultaneously detected, one of:
        serving the highest priority level request will be served as first if the detected switch
initiation criterions have different priority levels; and

4

serving a priority level request, which corresponds ~~if the switch initiation criteria are at~~ ~~the same priority level it is proposed that the one referring~~ to the lowest Traffic Number ~~will be~~ ~~served~~ first, if the detected switch initiation criterions have the same priority levels.

13.   (Currently amended) ~~A~~ The method according to claim 6, wherein, when ~~more~~ Signal Failure / Signal Degrade conditions are present within a protection group and not served, due to ~~the~~ a lack of available protection resources, the highest priority condition is served first as soon as one of the protection ~~resource~~ resources becomes available.

14.   (Currently amended) ~~A~~ The method according to claim 6, wherein~~, when more~~ the ~~protecting~~ protection resources are in a Wait Time to Restore (WTR) condition and no other protection resource is available, the method further comprises:

overriding ~~a new Bridge Request, will override~~ the WTR state on the protection resource having one of a lowest assigned number~~, or~~ and a highest~~;~~ assigned number with a new Bridge Request.

15.   (currently amended) A network element for at least one of a synchronous digital hierarchy (SDH) network and a synchronous optical networking (SONET) ~~SDH or SONET~~ network comprising at least two network elements~~, and~~ wherein an enhanced trail/path protection function is implemented, the network comprising a number N of working resources and a number M of protection resources and transmitting signal frames having a section overhead (SOH) in SDH technology, or a Line OverHead (LOH) in SONET technology, and a path overhead (POH)~~POH~~, said enhanced trail/path protection function comprising a linear multiplex section protection (MSP)~~MSP~~ N:1 trail protection function based on transmission of protection information through K1 and K2 bytes of the SOH~~Section OverHead~~ in the SDH technology or the LOH~~Line OverHead~~ in the SONET technology, wherein the network element ~~it~~ comprises a device which maps ~~for mapping~~ or de-maps ~~de-mapping the~~ content of said K1 and K2 bytes by a protocol exchange into POH bytes of the path overhead in the SDH technology or the SONET technology, for at least one of a Low Order path level and~~and/or~~ a High Order path level~~, so as to~~

5

allow ~~the~~ handling of ~~more than one protecting~~ the M protection ~~resource~~ resources shared among ~~different~~ the N working resources~~,~~ both in ~~an~~ end-to-end handling and ~~in~~ an intermediate handling, the network element is adapted to:

        provide a first multiframe and a second multiframe,

        map the content of the K1 and K2 bytes into a first portion of the POH bytes for each frame of the first multiframe~~for the end-to-end handling~~, and

        map the content of the K1 and K2 bytes into a second portion of the POH bytes for each frame of the second multiframe for the intermediate handling.

16.   (Currently amended) ~~A~~ The network element according to claim 15, wherein the first multiframe comprises ~~said device for mapping or de-mapping is capable of mapping or demapping, respectively,~~ a ~~four-bits~~ four-bit based multiframe whose payload comprises ~~the first four~~ bits 1 through 4 of the byte K1, ~~the second four~~ bits 5 through 8 of the byte K1, and ~~the first four~~ bits 1 through 4 of the byte K2.

17.   (Currently amended) ~~A~~ The network element according to claim 15, wherein at least one of the first and second multiframe comprises ~~said device for mapping or de-mapping is capable of mapping or demapping, respectively,~~ a ~~two-bits~~ two-bit based multiframe whose payload comprises ~~the first two~~ bits 1 and 2 of the byte K1, ~~the second two~~ bits 3 and 4 of the byte K1, ~~the third two~~ bits 5 and 6 of the byte K1, ~~the forth two~~ bits 7 and 8 of the byte K1, ~~the first two~~ bits 1 and 2 of the byte K2, and ~~the second two~~ bits 3 and 4 of the byte K2.

18.   (Canceled)

19.   (Original) A computer readable medium having a program recorded thereon, said computer readable medium comprising computer program code means adapted to perform the method according to claim 1 when said program is run on a computer.